

Sub B1

1. A method for treating damaged or scarred myocardial tissue, said method comprising administering to said damaged or scarred tissue a cellular suspension containing mesenchymal stem cells.

2. The method of claim 1, wherein at least one mesenchymal stem cell has been induced to differentiate into a cardiomyogenic cell.

3. The method of claim 1, wherein at least one mesenchymal stem cell integrates into a capillary wall in damaged or scarred myocardial tissue.

4. The method of claim 1, wherein said mesenchymal stem cells have been cultured for at least 7 days.

5. The method of claim 1, wherein said mesenchymal stem cells have been co-cultured with cardiomyocytes.

6. The method of claim 1, wherein said mesenchymal stem cells are autologous.

7. The method of claim 1, wherein said mesenchymal stem cells are exposed to 5-azacytidine or an analog thereof.

8. The method of claim 7, wherein said 5-azacytidine or said analog thereof is present at a concentration of 1 to 100 μ M.

9. The method of claim 8, wherein said 5-azacytidine or said analog thereof is present at a concentration of 10 μ M.

10. The method of claim 1, wherein said mesenchymal stem cells are isolated from bone marrow.

11. The method of claim 1, wherein said administering is by injecting.

Sub A3 12. The method of claim 1, wherein said method improves cardiac function.

Sub B2 13. The method of claim 1, wherein said mesenchymal stem cells are not passaged.

14. A method of obtaining a population of cells containing cardiomyogenic cells, said method comprising:

- a) obtaining mesenchymal stem cells;
- b) exposing said mesenchymal stem cells to 5-azacytidine or an analog thereof, wherein said exposing is sufficient to obtain at least one cardiomyogenic cell; and
- c) placing said cells from step b) into a medium suitable for injecting the cells into damaged or scarred myocardium.

15. The method of claim 14, wherein said mesenchymal stem cells are exposed for at least 7 days.

16. The method of claim 15, wherein the concentration of said 5-azacytidine or said analog thereof is between 1 and 100 μM .

17. The method of claim 16, wherein said concentration is 10 μM .

18. The method of claim 14, wherein at least one mesenchymal stem cell differentiates into a cardiomyogenic cell.

19. The method of claim 14, wherein at least one mesenchymal stem cell differentiates into an endothelial cell.

20. The method of claim 14, wherein said mesenchymal stem cells are isolated from bone marrow.

21. The method of claim 14, wherein said mesenchymal stem cells are not passaged.

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22. A therapeutic composition comprising mesenchymal stem cells and a pharmaceutically acceptable carrier appropriate for injection of the cells into damaged or scarred myocardium.

23. The therapeutic composition of claim 22, wherein said mesenchymal stem cells have been exposed to 5-azacytidine or an analog thereof.

24. The therapeutic composition of claim 22, wherein said mesenchymal

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